

Amendments to the Drawings:

The attached fourteen (14) sheets of formal drawings replace the informal drawings filed with the application. Fig. 6 has been modified to include additional blocks 149 and 150. This conforms Fig. 6 with the specification. Specifically, amended Fig. 6 conforms to paragraph [0051]. The reference "151" in paragraph [0051] is also amended herein to avoid use of the same reference twice ("151" is used for the "M-B Energy Method" block in Fig. 7). Original Fig. 8, which included eight (8) graphs, has been separated into Figs. 8A through 8H (containing one graph each). No new matter has been added.

Attachment: Fourteen (14) Replacement Sheets

REMARKS/ARGUMENTS

The office action of December 20, 2004 has been carefully reviewed and these remarks are responsive thereto. Claims 1-17 are pending. Claims 8, 11, 14 and 15 have been indicated as containing allowable subject matter. Claims 1-7, 9, 10, 12, 13 and 16-17 stand rejected. Applicants herein amend claim 1 and add new claims 18-58. Reconsideration and allowance of the instant application are respectfully requested.

The Drawings

The office action required new corrected drawings. Applicants are herein submitting original drawings to replace the informal drawings filed with the application. As indicated in the preceding "Amendments to the Drawings" section, Fig. 6 has been amended to conform to the specification, and Fig. 8 has been divided into Figs. 8A through 8H. No new matter has been added.

The Specification

Applicants herein amend specification paragraphs [0019] and [0057] to reflect that former Fig. 8 is now Figs. 8A through 8H. Applicants amend specification paragraph [0051] to correct a use of the same reference number ("151") for two different items. Specifically, the specification as filed uses 151 to refer to both a step in which "an EMR is calculated within the search window to form an EMR feature value" (paragraph [0051]) and to a decision block in Fig. 7 in which a "query is made ... as to whether beat detection will be made using multi-band energy within each granule" (paragraph [0053]). No new matter has been added.

The November 12, 2004 IDS

The office action did not include an initialed copy of Applicants' November 12, 2004 Supplemental Information Disclosure Statement. Applicants respectfully request that an initialed copy of same be returned with the next communication from the Office. An additional copy is attached.

The Claims

Applicants acknowledge with thanks the indication in the office action that claims 8, 11, 14 and 15 contain allowable subject matter. As set forth below, these claims depend from claims which are also allowable.

The office action rejected independent claim 1 under 35 U.S.C. § 103 based on U.S. Patent 6,175,632 (Marx) in view of U.S. Patent 6,141,637 (Kondo). Applicants herein amend claim 1 to recite deriving from the audio bitstream a window-switching pattern for sub-band sampling windows used to generate MDCT coefficients, as well as determining a window-switching beat position based on the derived window-switching pattern. Neither Marx nor Kondo (alone or in combination¹) teaches determining a window-switching beat position based on a derived window-switching pattern for sub-band sampling windows. Accordingly, claim 1 is allowable.

Moreover, claim 1 further recites "determining a baseline beat position using modified discrete cosine transform coefficients obtained from the audio bitstream." The office action concedes that Marx fails to teach this step. However, Kondo also fails to teach this step. Although Kondo does describe use of a modified discrete cosine transform (MDCT) and an inverse modified discrete cosine transform (IMDCT) for coding music and speech, Kondo does not teach determining a baseline beat position using MDCT coefficients. The portions cited by the examiner do not mention beats, and the undersigned has been unable to find a reference to beats elsewhere in Kondo. Claim 1 is thus allowable for at least this additional reason.

Applicants have also amended claim 1 to include reference letters (a)-(e). Applicants do so to enhance readability of claim 1 and to provide convenient points of reference in connection with newly added claims. The use of references (a) through (e) does not imply a temporal relationship between recited steps which is not otherwise required by the claim language.

Claims 2 and 3 stand rejected under 35 U.S.C. § 103 based on Marx in view of Kondo, and further in view of U.S. patent 6,305,943 (Pougatchev et al.). Because claims 2 and 3 depend from claim 1, and because Pougatchev et al. fails to teach the features of claim 1 missing from Kondo and Marx, claims 2 and 3 are likewise allowable for at least the same reasons as claim 1.²

¹ Applicants do not concede that the combination of Kondo and Marx is proper. The office action has failed to provide a motivation to combine the teachings of these references.

² Applicants do not concede that Kondo and Marx are properly combined with the various tertiary references applied against claims 2-7, 9, 10 and 12. For example, Pougatchev et al. relates to a "biofeedback training method and apparatus" that receives physiological data (e.g., heartbeat from an ECG or PPG) and computes respiratory sinus arrhythmia parameters. The office action provides no reasoning why a person would be motivated to input an audio bitstream into such a device.

Claims 4-5 have been rejected under 35 U.S.C. § 103 based on Marx in view of Kondo, and further in view of U.S. patent 5,875,257 (Marrin et al.). Because claims 4 and 5 depend from claim 1, and because Marrin et al. fails to teach the features of claim 1 missing from Kondo and Marx, claims 4 and 5 are likewise allowable for at least the same reasons as claim 1.

Claim 6 stands rejected under 35 U.S.C. § 103 based on Marx in view of Kondo, and further in view of "well known prior art." Specifically, the office action states that "the examiner takes Official Notice that converging two or more beat candidates to a single beat candidate is old and well known in the art of speech processing and therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to converge two or more beats into a single candidate, to provide an ensemble average and to provide sufficient statistical data[.]" Applicants traverse this statement and this use of official notice. Because claim 6 depends from allowable claim 1, and is thus allowable for at least the same reasons as claim 1, Applicants believe this ground for rejection is moot. Should this ground for rejection be maintained, Applicants request that the Examiner provide documentary evidence in support of the referenced "well known prior art." See MPEP § 2144.03 C.

Claim 7 stands rejected under 35 U.S.C. § 103 based on Marx in view of Kondo, and further in view of U.S. patent 6,738,524 (de Queiroz). Because claim 7 depends from claim 1, and because de Queiroz fails to teach the features of claim 1 missing from Kondo and Marx, claim 7 is likewise allowable for at least the same reasons as claim 1.

Claims 9, 10 and 12 have been rejected under 35 U.S.C. § 103 based on Marx in view of Kondo, and further in view of U.S. patent 6,287,258 (Phillips). Because claims 9, 10 and 12 depend from claim 1, and because Phillips fails to teach the features of claim 1 missing from Kondo and Marx, claims 9, 10 and 12 are likewise allowable for at least the same reasons as claim 1.

The office action rejected independent claims 13, 16 and 17 under 35 U.S.C. § 102(e) based on Kondo.³ However, each of these claims recites a feature not described or suggested by Kondo: a confidence score calculator. The office action points to Kondo Fig. 1 (elements 3, 5 and 7) and Kondo col. 7, lines 2-3 as teaching a confidence score calculator. However, Kondo

³ Applicants observe that Kondo is also prior art under section 102(a).

col. 6, line 32 through col. 7, line 3 describes the function of elements 3, 5 and 7, and contains no hint of a confidence calculation. Element 3 is a "divider" which divides modified discrete cosine transform (MDCT) coefficients by linear predictive coding (LPC) coefficients (a spectral envelope of the speech signal) so as to smooth the amplitude values of the MDCT coefficients. Element 5 is a "subtractor," where "pitch components" are separated from the smoothed MDCT components. Element 7 is another "divider," and normalizes the output of element 5 by the spectral envelope from a power spectrum analyzer. Far from teaching a confidence score calculator, Kondo col. 7, lines 2-3 state that "[t]he dividers 3, 7 and subtractor 5 constitute a calculating device that *smoothes* the MDCT coefficients" (emphasis added). The office action has provided no indication of how "smoothing" equates to calculating a confidence score.

Independent claims 16 and 17 are further distinguishable over Kondo, as each recites "a beat detector." As indicated above, Kondo is silent regarding beat detection.

Applicants herein add new claims 18-58 to more fully claim their invention. Claims 18-30 depend from claim 1, and are therefore allowable for at least the same reasons as claim 1. New independent claim 31 recites an audio encoder comprising a beat detector configured to perform steps of a method similar to that of claim 1. Accordingly, claim 31 is allowable for at least the same reasons as claim 1. Claims 32-44 depend from claim 31 and are allowable for at least the same reasons as claim 31. New independent claim 45 recites an audio decoder comprising a beat detector configured to perform steps of a method similar to that of claim 1. Accordingly, claim 45 is allowable for at least the same reasons as claim 1. Claims 45-58 depend from claim 45 and are allowable for at least the same reasons as claim 45.

Appl. No.: 09/966,482
Amendment dated: March 21, 2005
Reply to Office Action of December 20, 2004

Conclusion


It is respectfully submitted that this application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in even better form for allowance, the Examiner is respectfully urged to contact Applicants' undersigned representative at the below-listed number.

Respectfully submitted,

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Dated: March 21, 2005

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